

**Core Curriculum
Course Proposal Cover Sheet**

Department: **Mathematics**
College: **College of Science & Technology**
Department Head: **Bryant Wyatt**

Course Prefix & Number: **Math 118**
Course Title: **Precalculus**
Course Description: Applications of algebra and trigonometry to the study of elementary functions and their graphs including polynomial, rational, exponential, logarithmic, and trigonometric functions. Additional topics will be chosen from analytical geometry, linear algebra, mathematical induction, sequences, and series.

Please select the THECB Foundational Component Area for which this course is being submitted. (Please select only one)
Mathematics ([download forms](#))

(The “download forms” link for the selected Component Area includes the ***Foundational Component Area Justification Form*** and the ***Student Learning Outcome Alignment Form***)

Checklist:

Course Proposal Cover Sheet
Foundational Component Area Justification Form
Student Learning Outcome Alignment Form

MATHEMATICS

FOUNDATIONAL COMPONENT AREA JUSTIFICATION FORM

Rationale: Please provide a rationale for the course which explains how the course being proposed fits into this component based on the component's description. For your convenience, the overall description and rationale for this component are included below.

Mathematics (from THECB Chapter 4: 4.28)

- Courses in this category focus on quantitative literacy in logic, patterns, and relationships
- Courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience.
- The following three Core Objectives must be addressed in each course approved to fulfill this category requirement: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills.
 - Critical Thinking Skills: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information;
 - Communication Skills: to include effective development, interpretation and expression of ideas through written, oral and visual communication;
 - Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

Rationale for Inclusion in this Category:

The **Math 118** course is intended to be a rigorous study of the properties of algebraic, transcendental, and trigonometric functions. In this capacity, students use logic to analyze patterns and relationships to evaluate the types of functions that provide the most appropriate models, create the model, and then use it to answer contextual questions. Students must justify their solutions in written form, using appropriate technology as needed to support their conclusions.

STUDENT LEARNING OUTCOME ALIGNMENT FORM
Mathematics

Course Prefix/Number: Math 118
Course Title: Precalculus

Core Objective: Critical Thinking CT1: Students will evaluate evidence in analysis, interpretation or arguments

Course SLO(s):

1. Describe the characteristics of algebraic, transcendental, and trigonometric functions.
2. Select and apply appropriate strategies for solving equations arising from algebraic, transcendental, and trigonometric functions.
3. Develop a formula for algebraic, transcendental, and trigonometric functions based on function values represented graphically, tabularly, symbolically, or verbally.
4. Describe the domain and range for the algebraic, transcendental, and trigonometric functions from a graphical, tabular, symbolic, or verbal representation.

Learning Activities: Class lecture, cooperative learning activities, students working at the board, discovery-based activities, homework (including on-line homework)

Means of Assessment: Embedded test questions on the final exam

Core Objective: Critical Thinking CT2: Students will be able to synthesize varied components of information to form a rational conclusion.

Course SLO(s):

1. Represent a function four ways: graphically, symbolically, numerically, and verbally.
2. Select and apply appropriate strategies for solving equations arising from algebraic, transcendental, and trigonometric functions.
3. Develop a formula for algebraic, transcendental, and trigonometric functions based on function values represented graphically, numerically, symbolically, or verbally.
4. Describe the domain and range for the algebraic, transcendental, and trigonometric functions from a graphical, numerical, symbolic, or verbal representation.
5. Implement solution strategies to solve equations arising from algebraic, transcendental, or trigonometric functions.

6. Modify algebraic, transcendental, or trigonometric functions to reflect specified transformations.

Learning Activities: Class lecture, cooperative learning activities, students working at the board, discovery-based activities, homework (including on-line homework)

Means of Assessment: Embedded test questions on the final exam

Core Objective: Communication C1: Students will express ideas in written, visual or oral forms to a range of diverse audiences in multiple settings.

Course SLO(s):

1. Represent a function four ways: graphically, symbolically, numerically, and verbally.
2. Describe the characteristics of algebraic, transcendental, and trigonometric functions.
3. Describe the domain and range for the algebraic, transcendental, and trigonometric functions from a graphical, numerical, symbolic, or verbal representation.
4. Modify algebraic, transcendental, or trigonometric functions to reflect specified transformations.

Learning Activities: Class lecture, cooperative learning activities, students working at the board, discovery-based activities, homework (including on-line homework)

Means of Assessment: Embedded test questions on the final exam

Core Objective: Empirical and Quantitative EQS1: Students will gather, interpret or use numerical data/observable facts to arrive at an informed conclusion.

Course SLO(s):

1. Represent a function four ways: graphically, symbolically, numerically, and verbally.
2. Select and apply appropriate strategies for solving equations arising from algebraic, transcendental, and trigonometric functions.
3. Develop a formula for algebraic, transcendental, and trigonometric functions based on function values represented graphically, numerically, symbolically, or verbally.

4. Describe the domain and range for the algebraic, transcendental, and trigonometric functions from a graphical, numerical, symbolic, or verbal representation.
5. Implement solution strategies to solve equations arising from algebraic, transcendental, or trigonometric functions

Learning Activities: Class lecture, cooperative learning activities, students working at the board, discovery-based activities, homework (including on-line homework)

Means of Assessment: Embedded test questions on the final exam

As department head, I will ensure that all faculty that teach this course are aware of the requirements that these core objectives and learning strategies be incorporated into the above referenced course. This action is taken so that Tarleton State University will be in compliance with Texas Higher Education Coordinating Board foundational component area and core objective requirements for the General Education Core Curriculum.

Signature_____

We, the undersigned faculty, support the proposed changes to this course and agree to incorporate them into our section of the above referenced course. This action is taken so that Tarleton State University will be in compliance with Texas Higher Education Coordinating Board foundational component area and core objective requirements for the General Education Core Curriculum.

(Signed document should be kept in department office, listing names below on the electronic document implies acceptance)

The SLOs for Precalculus were developed by mathematics faculty; the department then voted to approve these SLOs in 2009. All mathematics department faculty are in agreement that these SLOs represent the Precalculus course.